

Clinical UpdateCompliments of
John Muir Health

Physician News

SERVICE LINE SPOTLIGHT:

Treating Atrial Fibrillation at the Cardiovascular Institute

John Muir Health's Cardiac Rhythm Center, part of the Cardiovascular Institute, provides advanced diagnosis and treatment of heart rhythm disorders, using the most cutting-edge technology available. The team performs computer-assisted diagnostic electrophysiology studies and catheter ablation procedures, which can precisely pinpoint and treat the tissue where an arrhythmia is triggered. They also perform implantation of pacemakers, defibrillators and cardiac resynchronization devices.

Several cardiac electrophysiologists, along with cardiovascular surgeons, work with a team including cardiac anesthesiologists, registered nurses, and technicians with specialized training in electrophysiology procedures.

The Range of Treatment Options for Arrhythmias

Radiofrequency (heat) Ablation is commonly used. It is a non-surgical procedure using small catheters in the heart to cauterize minute portions of the heart tissue that may be causing the arrhythmia.

Cooled-tip Radiofrequency Ablation allows the use of higher power to produce larger and deeper lesions when needed for the elimination of certain arrhythmias.

Cryoablation or freezing technology is an ablation option that delivers extreme cold, rather than heat, to treat abnormal tissue. Cryoablation can further enhance the safety of ablation of some higher risk arrhythmias.

About AF

The most common form of arrhythmia is atrial fibrillation, (AF). Almost three million people in the U.S. live with AF, an irregular heart rhythm originating in the upper chambers (atria) of the heart in which the heart's electrical system causes the atria to fibrillate. The quivering upsets the normal rhythm between the atria and the lower chambers (ventricles) of the heart, hindering the heart's ability to pump blood and depriving the body of oxygen and nutrients.

The Cardiac Rhythm Center features specialized equipment designed to assist physicians during complex electrophysiology studies.

These include:

- Computerized heart monitoring systems that provide exceptional EKG recordings during electrophysiology studies and ablations. These systems reduce procedure times and enhance diagnostic capabilities.

- Two separate computer-assisted 3-D mapping systems which are used to locate and guide treatment of the most complex arrhythmias. Each system has unique capabilities that allow electrophysiologists to select the best technology to diagnose and treat arrhythmias with greater accuracy and precision.
- Cardiac echocardiography that uses ultrasound technology to visualize the anatomy and physiology of the heart and measure blood flow from within the heart chambers. Images are transmitted via a steerable, ultrasound tipped catheter that is positioned inside the heart during certain procedures, such as ablation procedures for atrial fibrillation.

JMHPN visited with Susan Eisenberg, MD, medical director of the Cardiac Rhythm Center, and manager Scott Neal to get the newest updates on the Center and its treatment of AF and other arrhythmias.

JMHPN: What are the latest developments in your department?

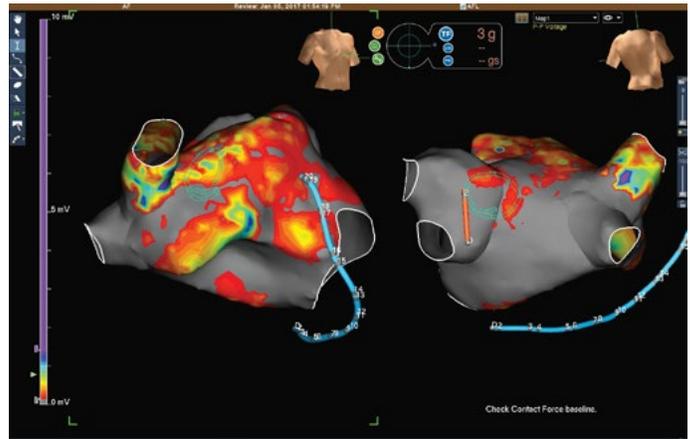
Dr. Eisenberg: We are just transitioning to a brand new mapping system, which is a quantum leap ahead of what we have now – which in itself is already pretty incredible! The new system is capable of collecting much more data – creating a much more detailed and reliable map, quicker than ever before. It will let us map complicated arrhythmias that have been difficult to map in the past.

In 15 years, this is the first major platform upgrade. Imagine what your 20-year-old computer can do, versus one made today. This new system can record thousands of points, as much as a terabyte of data per case.

We need that data as we move towards treating more complicated arrhythmias. Cases are more difficult, the disease is more advanced, and there are conditions that ten years ago, we couldn't have treated. Now, we are not just trying them, but succeeding. The new technology lets us approach complicated flutter rhythms that might result from prior ablations – which may have left scar tissue – where a finer map can target the source of an arrhythmia in a very direct way.

The bottom line: we can now do more for our patients

Scott Neal: Another one of our new developments is our hybrid AF program, which combines minimally



Hybrid AF: This computerized rendering of the left atrium shows atrial fibrillation originating from the pulmonary veins and extending into the posterior wall of the left atrium. Our new hybrid approach combines a surgical ablation of the posterior wall with endocardial ablation of the pulmonary veins.

invasive epicardial radiofrequency ablation (ablation on the outside of the heart) with endocardial cryoablation, done directly within the heart's chambers.

This is used in cases when the patient has had persistent AF, has had multiple previous ablations and is still having AF, or when the left atrium is severely enlarged.

Other centers are doing other types of hybrid AF technologies. We picked one that we felt was the most painless for our patients, with the shortest postoperative length of stay. We are seeing a high success rate with our process, and by February 15, we will have done 12 cases.

We want physicians to know that this is now available – a new way of treating a classification of chronic AF patients or those with an extremely dilated left atrium. These are patients who traditionally don't do well with endocardial ablation only.

The procedures are usually done in a short time frame: for instance, the patient may have surgery on a Wednesday morning, then spend the night in the hospital, then have the ablation on Thursday, and spend one more night in the hospital.

Among many accolades for our Cardiovascular Services, both hospitals are accredited chest pain centers, and have also received highest-level recognition from the American Heart and American Stroke Associations.

What else do you most want other MDs to know about your work at JMH?

Dr. Eisenberg: I'd like them to know that we have everything at JMH that all the academic centers have - and more - for highly complex mapping and treatment.

I would also like to stress that AF ablation is not just for people who have failed everything else. We want to see AF patients early when we can treat them before disease progresses. We hope that primary care physicians will refer these patients right off the bat.

In addition, we are launching a new WATCHMAN program - for patients in whom the left atrial appendage occludes. One problem with AF is that it's a leading cause of stroke. This appendage, the "little useless appendix of the heart," collects blood clots, a major source of those strokes. We are now able to implant a little umbrella that blocks the opening to the appendage. This could drop stroke risk.

Physicians can also send us early and very advanced AF patients who cannot take blood thinners.

Scott Neal: We are quite busy, but could still see more patients. What happens more times than not with people with AF is that they aren't getting to their doctors or an electrophysiologist until the substrate has taken over, or they have transitioned to a chronic state. They may have paroxysmal rather than chronic fibrillation. But we want to emphasize that treating early is the key. The more the patient is in AF, the more they'll continue to be in that state. They are seven times more likely to have a stroke. Medications can be life-altering, with serious side effects. Most importantly, when your heart is not synchronized, you may feel terrible, and may develop cardiomyopathy, wearing out the heart.

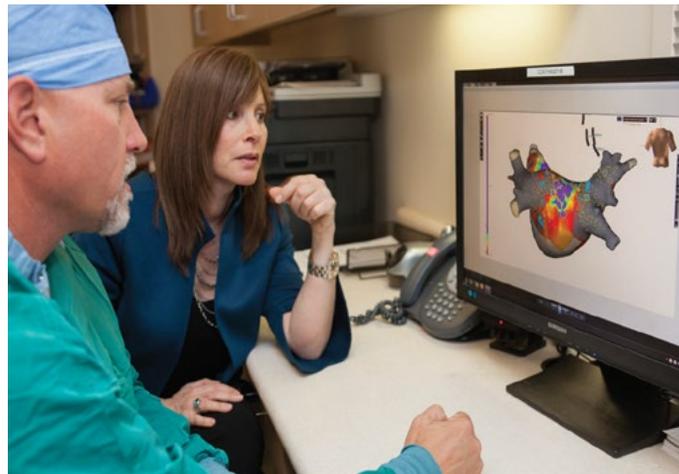
What makes you most proud?

Dr. Eisenberg: I'm most proud of how we stay on the cutting edge of electrophysiology. When there is new technology or a new technique, we find it, we get into it, we are right out there with the most leading-edge hospitals. This is not like a small community hospital. John Muir Health is as close to an academic center as you can get in the East Bay.

What will be most challenging in the future?

Dr. Eisenberg: It's all challenging! Ischemic

ventricular tachycardia (VT) is our next frontier. We are considering tackling advanced ventricular arrhythmias and ventricular fibrillation. This is very hard, even for the major centers.



Susan Eisenberg, MD, medical director, and Scott Neal, manager of the Cardiac Rhythm Center.

Can you relate any patient stories?

Scott Neal: For patients living with AF, heart rates can often go well above 100 beats per minute for long periods of time. They are forced to take many different medications; it is a very difficult way to live.

My own father had AF -- left atrial flutter. He was always on meds, and always fatigued. He underwent ablation for AF and flutter eight months ago. It has created a dramatic change in his life. Now, he feels free - he used to have to take his blood pressure and heart rate 12 times a day. He's not just arrhythmia-free now, but is exercising again, not short of breath, and he can travel.

Electrophysiology is one of the very few areas of medicine that is curative, not palliative. Today, you may walk in with an arrhythmia; tomorrow it's 'fixed.' For 20-30 years, supraventricular tachycardia (SVT) patients were told to 'live with' their condition. Now, we have treatments that are literally life-changing. That's what gives me purpose.

Dr. Eisenberg: To be able to cure people is really gratifying. It's a marriage of high tech and old-fashioned patient care in the office. We're lucky. The fascinating technology we use makes us feel that we are constantly learning. This field just keeps evolving.

